Establishing a university-wide culture on sustainability by developing sustainability change agents: Lessons from Stellenbosch University's Listen, Live and Learn (LLL) Initiative.

By

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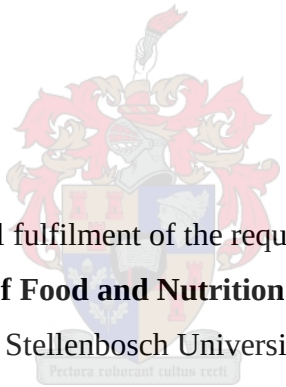

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Declaration

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Abstract

Universities are one of many solutions and problems to the global sustainability challenge. They are large in size with a growing population, they have various complex environmentally compromising activities, and are responsible for educating and developing future leaders, entrepreneurs and active citizens at large. Stellenbosch University (SU) can facilitate continuity in establishing a university-wide culture on sustainability by developing change agents through the Listen, Live, Learn (LLL) initiatives at SU. The LLL is a flagship residence with a co-curricular program that aims to encourage social cohesion and change agency among its participants. This study explored learning outcomes of students (in terms of agency development, self-awareness, and enquiring mind) after they lived in the LLL sustainability lot for a year and their recommendations for improving the program. Secondary data on the participants' final reflections on the LLL co-curricular programme were obtained from the LLL coordinators and analysed using thematic analysis as per Azuma's et al. (2010), framework for guidelines for program designs that best serve the development of change agents.

The research findings in this study revealed that: (1) The LLL participants did not interact regularly; (2) The students reported that they learned valuable in terms of agency development, self-awareness, and enquiring mind; (3) In this study the respondents noted that their experience in the LLL program can be improved through proper planning, conflict resolution, and improved communication. This study found that the LLL program produces change in students. However, whether this change will result in behaviour is yet to be examined. The LLL program can promote regular interactions that are related to the themes of the student houses and improve planning, communication and conflict resolution to enhance the impact of the program.

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Opsomming

Die Universiteit is beide die probleem en oplossing vir die heidige universele volhoubaarheids uitdaging. Nie net is dit groot met die immergroeiende populasie en verskeidenheid komplekse omgewings-gebaseerde-aktiwiteite nie, dit is ook verantwoordelik vir die opvoeding en ontwikkeling van toekomstige leiers, entrepreneurs sowel as volronde en aktiewe burgers. Die Universiteit van Stellenbosch kan ‘n kultuur van volhoubaareid fasiliteer, met behulp van veranderings-agente, deur the Listen, Live, Learn (LLL) inisiatief se ekstra-kurrikulêre programme. Die LLL is ‘n koshuis met ekstra-kurrikulêre programme wat beoog om deelnemers aan te moedig om sosiale-kohesie en verandering-aspektes te bevorder. Hierdie navorsing het gekyk na die leeruitkomste van die student (in terme van agentskap ontwikkeling, self-bewusmaking, en ‘n nuuskurige verstand), nadat hulle in die LLL gebly het vir een jaar en hulle voorstelle om die program te verbeter. Sekondêre data van die deelnemers se finale refleksie op die LLL se ekstra-kurrikulêre programme was deur die LLL koördineerders versamel en geanaliseer deur tematiese analiese metodes soos uitgesit in die raamwerk van Azuma’s et al. (2010), vir riglyne vir die ontwerp van die program wat die beste van toepassing is vir die ontwikkeling van veranderings-agente.

Die resultaat van hierdie navorsing het getoon dat: (1) Die LLL deelnemers het nie gereelde interaksie met mekaar gehad nie, (2) Die deelnemers het beskryf dat hulle waarde gevind het in terme van die voorgeskryfte leeruitkomste (agentskap ontwikkeling, self-bewusmaking, en ‘n nuuskurige verstand), (3) Verbeterings aspekte in die LLL program, soos beskryf deur deelnemers, was die volgende; beter beplaning, konflik oplossing tegnieke and beter kommunikasie. Die navorsing het bevind dat die LLL program kan wel verandering in deelnemers bevorder – of hierdie verandering sal ‘n proaktiewe volhoubaarheids gedrag effek sal hê, moet nog bepaal word. Deur die bevordering van gereelde interaksie, met verwysing na die tema van die studenthuise, sowel as die verbeterde beplanning, kommunikasie and konflik oplossings tegnieke, kan die impak van die LLL program versterk.

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List of Abbreviations

EFS	Education for sustainability
SIE	sustainability in education
EMS	Environmental Management System
GDP	Gross Domestic Profit
ICT	Intergroup Contact Theory
LLL	Listen, Live, Learn
LFA	Logical Framework Approach
M&E	Monitoring and Evaluation
REC	Research Ethics Committee
SU	Stellenbosch University
VoC	Voice of Cynicism
VoF	Voice of Fear
VoJ	Voice of Judgement

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Chapter One

Introduction

1.1 Background

Education is an internationally recognised tool for solving global challenges such as the sustainability challenge (ARIES, 2009; Fadeeva & Mochizuki, 2010). Azuma et al. (2010), describes the sustainability challenge as an unsustainable interaction between society and the natural environment. Thus, in the race against the socio-economic and environmental ramification of climate change, education for sustainability (EFS) and sustainability in education (SIE) has particularly gained traction in tertiary institutions because they not only contribute to the sustainability challenge, but they are also instrumental in addressing it (McFarlane & Ogazon, 2011; Williams, 2014; Azuma et al., 2010).

While pro-sustainability strategies may be seen in some universities, a number of studies argue that many of these approaches are usually on an ad hoc basis and are therefore inefficient and cannot guarantee sustainability (Ebrahimi & North, 2018; Alshuwikhat & Abubakar, 2008). Instead, Alshuwikhat and Abubakar (2008), notes that more systematic and integrated approaches, spanning across three areas, namely: "Environmental Management System (EMS); public participation and social responsibility; and promoting sustainability in teaching and research" (p. 1777), are needed to address sustainability issues since they are multifaceted, affecting universities in multiple ways. In promoting sustainability in teaching, tertiary institutions are therefore also challenged to produce young professionals who are capable of being change agents – people with interdisciplinary and transformation competencies (Michael, 2011) to integrate sustainability in all aspects of their lives.

As per the 2010 policy for integrated sustainability, Stellenbosch University (SU) aims, “deliver leaders [or sustainability change agents] for the 21st century, who have the insight, attitude, practices, and skills to integrate sustainability into their lives, their work and their communities” (SU, 2010, p. 2). Using food waste as an example, SU students can already integrate sustainability in their lives and university communities by collectively reducing the amount of food waste they generate at their residential cafeterias. Generally, food waste generation on university campuses is high (Painter at al., 2016). Approximately 540 million tonnes of food waste is generated annually by universities worldwide, and the numbers are set

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to increase with the growing number of students on campuses worldwide (Creighton, 1998). A study by Painter at al. (2016), showed that approximately 555g of food waste was generated annually at Rhodes University in South Africa. At SU, the average student wasted about 17% of their meal in 2015. (Marias et al., 2017). Yet, at the same time, food insecurity remains a persistent predicament within which a large number of university students find themselves. At the University of Free State (South Africa), two out of every three students were reported as food insecure (Van den Berg et al., 2015). This situation is especially unacceptable because food waste generated by university students is largely avoidable and influenced by consumer behaviours – which, with transformative sustainability learning approaches, can be changed (Marias et al., 2017; Diaz-Ruiz et al., 2018).

Using food waste as a lens to navigate the issue of sustainability on university campuses, the purpose is to explore if the Listen, Live, Learn (LLL) initiative can currently assist SU to facilitate continuity in establishing a university-wide culture on sustainability by developing sustainability change agents who can be active participants in, food waste reduction movement (among other sustainability related things). The LLL initiative, a flagship residence at SU with a student-centred co-curricular experiential learning program that promotes social cohesion and change agency. It seeks to facilitate critical engagements among its participants on various themes which are complex issues of importance as well as encourage the participants to collaborate on finding solutions to challenges prevalent in their themes (LLL initiative n.d.) Some of the 2018 house themes included food security, water and waste management, and nature conservation – all classified under the sustainability lot.

This study is premised on the assumption that, theoretically, the LLL initiative appears to be an avenue of with a strong platform that (1) challenges its participants' attitudes, (2) influence their practices, and (3) develops relevant skills that will enable them to take action and bring about positive change for sustainability (among other things). Therefore, with this in mind, it is plausible to believe that the LLL initiative can be leveraged to fulfil the policy for integrated sustainability's aim to develop and "deliver leaders [or sustainability change agents] for the 21st century, who have the insight, attitude, practices, and skills to integrate sustainability into their lives, their work and their communities" (SU, 2010, p. 2).

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1.2 Problem statement

Sustainability is a growing concern in universities across the globe. Sustainability education is among the numerous interdisciplinary recommended approaches for addressing it. While it is generally accepted that educating people on sustainability can alter their decision-making process regarding their unsustainable behaviours, research shows that, in some instances, that general awareness doesn't lead to conduct, action or changed behaviours (Diaz-Ruiz et al., 2017; Alooh, 2015). For instance, Marais's et al. (2017), study revealed that despite pre-existing general knowledge on food waste and its ramification, most of the students recognised that they were not doing enough to reduce their food waste.

A number of studies argue that many traditional approaches in sustainability education are designed as knowledge 'delivery mechanisms' (Podger et al., 2010; ARIES, 2009). This mode deviates from the contemporary recommendations for alternative sustainability educational approaches such as holistic, interdisciplinary, experiential, and value-based learning where people are exposed to "capacity building opportunities that [develop wide range of competencies that enable] individuals to act as agents for change" (ARIES, 2009, p. 3; Olvitt and Lotz-Sisitka, 2018). Accordingly, there are ongoing debates on the type of competencies relevant for change agents. For example, Podger at al. (2010), argues that personal and social competencies, where virtues associated with high moral dispositions are developed should be the focus. While other studies focus on domain and methodological competencies, where skills and discipline specific knowledge are integrated and developed (Fadeeva & Mochizuki, 2010; Parker, 2010). Fadeeva & Mochizuki (2010), argue that competencies for sustainability education should not be one size fits all prescription. Instead, learning competencies should be aligned with those "whose needs and desires are being addressed" (p.400), the purpose the program seeks to fulfil, and the kind of world within which these competencies are applicable (Fadeeva & Mochizuki, 2010).

The competencies approach to sustainability education is especially conducive for transformational learning because it provides guidance on how to design and structure effective programs and curriculums capable of developing and delivering change agents for sustainability (Fadeeva & Mochizuki, 2010; Lotz-Sisitka & Raven (2009). Although the competencies approach is a good basis for a more effective program design, Lotz-Sisitka & Raven (2009) argues that it is only as good as the translation of these competencies into actual

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transformative educational programs. According to Lotz-Sisitka and Raven (2009), "shallow or inadequate interpretations of the competencies framework in development of actual educational programs may limit the transformative potential of education to turn students into change agents" (Fadeeva & Mochizuki, 2010, p.394).

1.3 Research aim and objectives

The aim of this study is to explore what students living in the sustainability lot have learned as sustainability change agents after participating in the LLL program for a year.

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1.3.1 The objectives for this study are:

1. To ascertain how the students in the LLL sustainability lot engage or interact in their respective theme houses.
2. To ascertain what students in the LLL sustainability lot have learned in terms of agency development, self-awareness, and enquiring mind.
3. To ascertain what students in the LLL sustainability lot think can be done to improve their experience in the program.

1.4 Rationale

There is a growing body of research supporting the idea that alternative learning approaches for sustainability education such as experiential learning and real-world learning approaches (among many other) are more effective in developing change agents with the necessary competencies compared to the traditional forms of education (Michael, 2011; ARIES, 2009; Fadeeva & Mochizuki, 2010). Studies suggest that these alternative approaches are effective because they are often able to bridge the mental gap between the possession of sustainability knowledge and the display of pro-sustainability behaviours, actions or conducts (Podger et al., 2010; Azuma et al., 2010; Kollmuss & Agyeman, 2002). Therefore, experiential learning programs, such as the Listen, Live, Learn (LLL) – a co-curricular program that seeks to encourage social cohesion and change agency at SU, are becoming essential and innovative avenues to further integrate sustainability across all spheres in tertiary institutions (especially in student residential spaces).

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1.5 Thesis outline

This thesis is presented in five chapters.

Chapter one, the introduction, gives a background upon which this study is based. It further highlights the problem statement, research aim and objects, and the research rationale.

Chapter two, the literature review section, explores sustainability in university campuses, the evolution of sustainability education, change agency and education for sustainability, and finally the role of alternative educational approaches, such as the LLL initiative, in developing change agents for sustainability.

Chapter three, the method and materials section, gives a general plan of how the researcher answered the research question and objectives. It also highlights the research sample size, data collection, data analysis, data credibility, ethical considerations, as well as the study scope and limitations.

Chapter four, the results section, gives a comprehensive description of the students that participated in the LLL initiative in 2018. This is followed by a detailed account of the research findings as per the first three research objectives – 'how the students interact in the LLL houses', 'what the students have learned during the program', and 'what the students think can be done to improve the program'.

Chapter five focuses on the discussion, conclusion, and recommendations of the study. The key findings and recommendations to improve the LLL initiative potential as an avenue for establishing a campus-wide culture on sustainability by developing change agents are discussed. Followed by a conclusion and recommendations for the LLL initiatives consideration.

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Chapter Two

Sustainability education in universities

2.1 Introduction of sustainability in university campuses

Universities have an array of campus activities and operations that have significant negative as well as positive impacts on the environment (Alshuwaikhat & Abubakar, 2008, Holmberg, 2014). Moreover, the growing university population puts added pressure on the demand for limited resources such as land and water, further degrading the environment's capacity to sustain itself and human life (Bernheim, 2003). Since the Stockholm Declaration of 1972 – the first to make reference to sustainability in higher education, sustainability in universities continues to gain more and more traction across the globe (Alshuwaikhat & Abubakar, 2008). Several other declarations, such as the Talloires Declaration of 1990 and the Swansea Declaration of 1993, the UN Decade for Education for Sustainable Development (2005-2014) – are all examples of concerted policy efforts encouraging universities to adopt and integrate sustainability practices into their activities and operations (Alshuwaikhat & Abubakar, 2008; UNESCO, 2012; UNEVOC, 2020).

On campuses, food waste is a comprehensive (i.e. needing multidimensional approaches to addressing it) example of the sustainability issue which falls among the various operations and activities of concern in universities (Painter at al., 2016). According to Creighton (1998), approximately 540 million tonnes of food waste is generated annually by universities worldwide, and the numbers are set to increase with the growing number of students on campuses worldwide. The persistence food waste on university campuses is preventable (as it is driven by consumer behaviours), unacceptable, and points to the need for more concerted efforts towards transformative sustainability educational approaches capable of turning students in sustainability change agents, who, in this case, can initiate and/or participate in campus movements involved in food waste reduction. Common approaches to address the growing concerns of food waste on campuses across the globe include agencies holding universities to the same standards as industry or prohibiting organic waste disposal in landfills, among other law enforcement (Marias et al., 2017; Savely et al., 2007; Alshuwaikhat & Abubakar, 2008).

At SU, strict municipal law enforcement prohibiting the disposal of organic waste material in landfills forced the university to adopt alternative food waste management approaches to

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process organic matter on site. These alternative approaches included “direct digestion by soldier flies [and] incorporating waste (20%) in static windrow composting” (Marais et al., 2017, p. 61).

Furthermore, Diaz-Ruiz et al. (2018) argues that other common approaches for addressing food waste, such as research, mostly either examine a partial dimension [of behaviour change] or focus on estimating the amount of food wasted” (p. 1141). However, evidence suggests that quantifying food waste and adopting alternative food waste management strategies is only a part of the solution. These strategies alone do not contribute toward preventing food waste. Instead, quantitative research and food waste management strategies need to be coupled with qualitative research approaches and consumer behavioural change strategies for them to have an accelerated positive impact on sustainability (Shafiee-Jood & Ximing Cai, 2016; Diaz-Ruiz et al., 2018).

Diaz-Ruiz et al. (2018), notes that employing strategies that target the consumer behavioural aspects of food waste (and sustainability at large) is challenging, but necessary. Factors underpinning the decision-making processes that lead to wasteful and unsustainable behaviours are multi-layered (Diaz-Ruiz et al., 2018). These decisions-making processes are shaped by socio-economic and personal factors, and the outcomes thereof are an amalgamation of the resulting decisions, personal values, and engagements (Diaz-Ruiz et al., 2018). Nevertheless, there is a general consensus that educating people on sustainability (which includes a focus on food waste) can alter their decision-making process regarding unsustainable behaviours, attitudes, and practices (Alshuwaikhat & Abubakar, 2008; Diaz-Ruiz et al., 2018; Williams, 2014). For example, Whitehair et al. (2013), found that “simple written messages reduced food waste by up to 14% in a university dining hall facility in the USA" (Painter et al., 2016, p. 492). However, despite the known positive and potential outcomes of sustainability education, EFS retains the smallest proportion in the educational pedagogy (McFarlane & Ogazon, 2011). This, according to McFarlane & Ogazon (2011), has, in part, resulted in a society where sustainability has little or no meaning.

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2.2 Evolution of education for sustainability

The idea that education for sustainability (EFS) should be integral elements in all levels of the educational system is widespread (McFarlane & Ogazon, 2011). It has particularly gained more traction in higher education out of the belief that universities have an innate obligation to make a positive societal contribution by, in part, making sustainability a teaching tool (McFarlane & Ogazon, 2011; Alshuwikhat & Abubakar, 2008). Higher education prepares and develops future leaders, entrepreneurs and activate citizens at large; thus, making it an effective avenue for communicating the importance and value of sustainability (Alshuwikhat & Abubakar, 2008) and cultivating a new generation of sustainability change agents (Azuma et al., 2010; Ramsarup, 2015).

Since UNESCO's call for universities to produce sustainability leaders in 1975, there has been an evolving paradigm shift in EFS, from it being a knowledge delivery mechanism to being transformational, practical and relevant in meeting the demands of the sustainability challenge (Feagan, 2018). The paradigm shift comes after a widely recognised institutional failure to effectively educate for sustainability by offering relevant educational provisions and the need to produce change agents (Fadeeva & Mochizuki, 2010, p. 391). Several studies suggest that the current educational provisions for sustainability are not relevant because of the nature of the current educational systems and the general culture of modern society (McFarlane & Ogazon, 2011; Azuma et al., 2010).

According to McFarlane & Ogazon (2011), the current education system “has not been designed to embrace the sustainability challenge, but rather to address economic and wealth issues” (p. 84). This, in turn, has cultivated a culture where high mass production and consumption with excessive spending and waste generation are societal norms (McFarlane & Ogazon, 2011). Azuma et al. (2010), states that at the root of the institutional failure to educate for the sustainability challenge lies a world view that hampers societies inclination to sustainability. This world view stems from a disconnectedness and misalignment of values and beliefs regarding the relationship between modern society and the natural environment (Azuma et al., 2010). As Pablo Solón, Bolivian United Nations Ambassador said: "The underlying cause [of climate change] is the belief that humans are separate from and superior to nature, and more than that more is better. These beliefs have fuelled the misconceived and doomed

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attempts for industrialised, consumer-oriented societies to achieve lasting human wellbeing by exploiting and damaging Earth" (Azuma et al., 2010, p. 1-2).

Therefore, research suggests that in order for EFS to effectively develop student competencies that enable learners to meet the sustainability challenge, educational provisions need to rigorously confront the educational and cultural factors that hamper the societies' inclination toward sustainability (Azuma et al., 2010; Fadeeva & Mochizuki, 2010; Huckle, 2004). Research shows that EFS needs to challenge the underlying structural conventions underpinning the current educational systems (Fadeeva & Mochizuki, 2010). Mostly by promoting alternative learning approaches that foster whole-person based learning (with a focus on higher-order dispositions) (Podger et al., 2010; Macintyre *et al.*, 2018; Rosenberg, Lotz-sisitka and Ramsarup, 2018) and systems thinking which cultivate "an awakening to the interconnectedness [and] wholeness of everything" (Fadeeva & Mochizuki, 2010, p. 395) as well as an understanding of how the human-nature interactions became unsustainable in the first place (Azuma et al., 2010). Furthermore, Huckle (2004), states that it can also do this by promoting alternative learning approaches that "can provide opportunities for praxis and for evaluating academic ideas alongside lay and tacit knowledge" (Huckle, 2004, p.37). In doing so, the necessary competencies for students to become change agents for sustainability can be developed. Alternative and transformative learning method (such as real-world learning, experiential learning, interdisciplinary and holistic learning, value-based learning and communities of practice) are among the most effective approaches in developing sustainability change agents compared to traditional forms of education (Feagan, 2018; ARIES, 2009 Azuma et al., 2010).

South African has a long history of education for sustainability and change agency (Skills for Green Job, 2014; Rosenberg, Lotz-sisitka and Ramsarup, 2018). The programmes implemented in universities aim to develop learning environments and learning experiences that will enable students to work towards having a good quality of life in a sustainable environment. Some universities (e.g., Rhodes, Cape Town) report a growing environmental awareness among the student body, and among a growing number of staff members, even though this awareness has not reflected in behaviours (Rosenberg et al., 2015). The experiences of schools in such programmes provide some understanding into how ESF is being implemented in South African schools so that it achieves its goals for the development of society.

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2.3 Program design for sustainability education for change agents

Simply put, a change agent can be described as an action-oriented person who "initiates, manages, or implements change" (Caldwell, 2003, p.131). More specifically, a change agent for sustainability, can be described as a person with the "capability to navigate flexibly and reflectively [the multi dynamic complexity of sustainability] and find solutions based on careful judgements of the specific context in which one is acting" (Poeck et al., 2017). It is widely accepted that anyone can become a change agent (Azuma et al., 2010). Accordingly, the interest in how institutions (formal and non-formal) can empower people to become change agents is a growing topic of interest for many sustainability researchers (Huckle, 2004; Azuma et al., 2010; Fadeeva & Mochizuki, 2010; Lotz-Sisitka & Raven, 2009).

Research shows that often, knowledge or awareness on sustainability issues among the general public is not enough to lead to pro-sustainability behaviour, conduct or action (Alooh, 2015; Kollmuss & Agyeman, 2002). Kollmuss & Agyeman (2002), argue that this is because internal and external factors cause a mental gap between the "possession of [sustainability] knowledge and the display of pro-[sustainability] behaviour" (p. 240). External factors include institutional, socio-economic, and cultural barriers; while internal factors include barriers such as motivation, sustainability knowledge, values, responsibility, and priorities (Kollmuss & Agyeman, 2002). Podger's et al. (2010) study elaborates on how internal factors related to values and personal responsibility create the mental gap that prohibits people from displaying pro-sustainability behaviours, despite the possession of pro-sustainability knowledge. He states that the key to translating sustainability knowledge to action is to develop, within the learner, moral motivations that advance sustainability action (Podger et al., 2010). According to Podger et al. (2010), people are governed by moral and expedient motives; both of which are underpinned by a person's sense of identity; sources of one's authority; sense of relatedness; and meaning of life. He argues that the state of the current socio-economic fabric (i.e. the prevailing economic disparities, deteriorating environment, poverty, etc.), is a consequence of a conflict between primary expedient (e.g. ego-driven aspirations) and primary moral motives (e.g. a commitment to higher principled social commitments) (Podger et al., 2010). Therefore, when people are governed by dominant moral motivations across all four dimensions, Podger et al. (2010), argues that they are likely to act for sustainability. According to Podger et al. (2010), having dominant moral motives across all four dimensions means that:

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- The individual's sense of identity is based on them identifying "as a member of a world human family, both diverse and interdependent" (p. 343).
- The individual's sources of their sense of authority are based on "authentic examples of moral authority", upholding values of integrity, service to others, among many others (p. 344).
- The individual feels connected to themselves, others, and the world around them and can take in and appreciate different perspectives.
- The individual understands the meaning of life as a journey toward understanding, wisdom, resilience, and commitment to positive agency.

Azuma et al. (2010), shares a similar sentiment to Kollmuss & Agyeman (2002) and Podger et al. (2010) regarding the profound influence that internal factors have on one's capability to act for sustainability. However, Azuma's framework goes even further to say sustainability education for change necessitates equal attention to developing both personal agency and an emergent understanding of sustainability knowledge. He states that for a person to become a change agent, they should: (1) "adopt and operate from an emergent understanding of the world" (p. 7) – that the world is interconnected and driven by systematic interactions and relations; (2) have a systemic and holistic understanding of sustainability; (3) be oriented towards fulfilling their vision of a better future and reaching their highest potential (Azuma et al., 2010). The first two relate to the philosophy upon which knowledge on sustainability is based and the latter relates personal agency. Azuma et al. (2010), focuses on psychological barriers (the three voices of judgement, cynicism, and fear), as one of the internal factors that profoundly influence an individual personal agency and ultimately their ability to reach their highest potential.

Azuma's et al. (2010) philosophical approach to change agency and sustainability aligns with the contemporary critical realism philosophy and approach in transformative sustainability education (Huckle,2004). Both the critical realism approach to transformative sustainability education and Azuma's framework approach considers sustainability education as a tool for providing opportunities for praxis and for unifying the natural and social science while at the same time recognising their differences (Huckle, 2004). Therefore, Azuma's et al. (2010), study provides an appropriate theoretical framework and basis for this study. In his study, six sustainability education programs (from Sweden (3), Denmark (1), Spain (1), and Brazil (1)), which he referred to as 'leading-edge programs', were evaluated to determine the assumptions

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that guide the design of learning programs that best serve for everyone to become a sustainability changemaker. His research concluded by highlighting the following three strategic program design guidelines that best serve the development of change agents for sustainability.

- Guideline 1: The program design needs to use the learner's 'self' a primary instrument for learning.
- Guideline 2: The program design needs to integrate three dimensions: intellectual-cognitive-theory dimension (head); emotional-intuition-self dimension (heart); and physical-experiential-action dimension (hand) in the learning process to empower and encourage learners to overcome their mental barriers.
- Guideline 3: The program design needs to cultivate a safe and fertile space for self-learning to unfold itself.

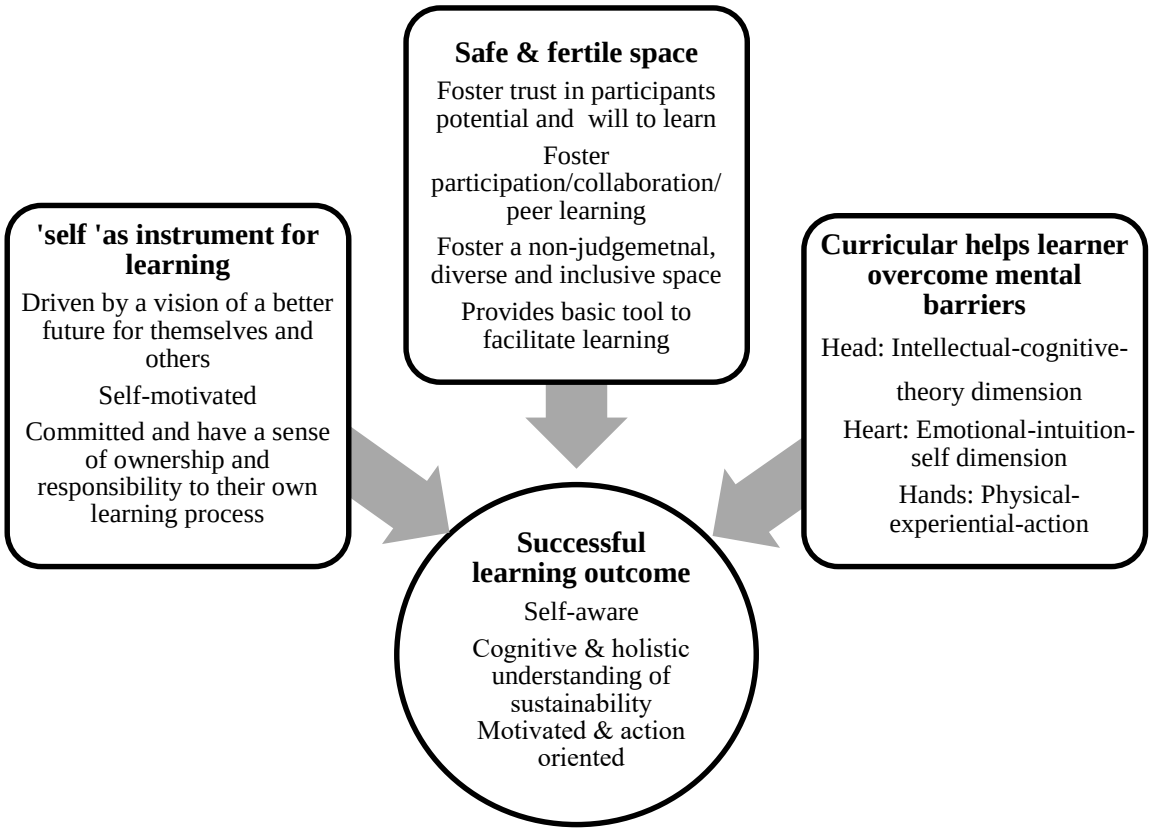

Figure 2. 1: Strategic program design guidelines for alternative learning programs for sustainability change agents.

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2.3.1. Guideline 1: Using the learner's 'self 'as a primary instrument for learning

According to Azuma et al. (2010), the leading-edge programs for sustainability changemakers in his study were student-centred. This means that the participants' commitment and sense of ownership to their own learning process were vital – they underpinned the design of the learning program. To ensure that the participants' commitment to the learning process some programs required individuals to envision a better future for themselves using the 'learning contract' as a tool to help them clarify their learning objectives and internalise their purpose (Azuma's et al., 2010). By answering the five primary questions in the contract ("where have I been; where am I now; where do I want to get to; how will I get there; and how will I know if I have arrived"), the learners were prompted to build a personal learning plan and monitor their progress (Azuma's et al., 2010, p. 37-38). Other programs assessed the learner's potential to use 'self' as a learning instrument by assessing their commitment and initiative to want to learn by providing prospective participants with time-consuming applications forms (Azuma et al., 2010). Essentially, the idea of using the learner's 'self' as a primary instrument for learning has to do with ensuring that the learners value the learning opportunities enough for them to take the initiative and responsibility to make use of them and make things happen.

2.3.2. Guideline 2: Integrating heart, head, and hand for a holistic learning process that supports learners to overcome mental barriers

According to Azuma et al. (2010), leading-edge learning programs were effective in developing sustainability change agents because their learning processes integrated the three dimensions (heart, head, and hand) in the curricular offerings. Doing so enhanced the students learning process by facilitating the process of bridging the mental gap between knowledge and action by appealing to the heart – where the will and motivation to act for sustainability lies (Azuma et al., 2010).

Integrating the Heart:

Contrary to the traditional forms of education for sustainability, 'alternative' learning programs promote the development of the 'whole person' – which includes developing the 'emotional-intuition-self dimension' through means of self-development and cultivating moral consciousness and higher dispositions (Podger. et al., 2010; Azuma et al., 2010). Scharmer (2009) goes as far as to say that self-awareness is the most imperative leadership or change agency tool. Azuma's et al. (2010) study showed that leading-edge programs challenged the

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participants' mental constructs of ‘self’ and the world. These programs facilitated the dismantling of the participant’s mental barriers as they are known to affect an individual’s ability to communicate and reach their highest potential (Azuma's et al., 2010). According to Scharmer (2009), there are at least three inner voices of resistance that inhibit a leader’s or change maker’s impetus to act.

- **Voice of Judgement (VoJ)**: The VoJ limits an individual’s view of the world by judging or viewing new insight through the lens of their old habits of thoughts. Scharmer (2009) states that facing and mastering the VoJ involves building intellectual intelligence by suspending one’s habitual judgements about the perceived reality and opening the mind to new things by seeing with fresh eyes.

- **Voice of Cynicism (VoC)**: The VoC represents the armouries (i.e., emotional distancing acts) that an individual uses to shield themselves from being vulnerable to uncertainty and risk. Facing and mastering the VoC involves building emotional intelligence by opening the gates of the heart and putting oneself in a position of vulnerability to gain perception.

- **Voice of Fear (VoF)**: The VoF prevents individuals from letting go of “one’s old identities and intentions”. According to Scharmer (2009), in order to allow the 'future higher potential self' to emerge, one needs to develop their spiritual intelligence by building their ability to let go of these old identities and embracing the future and authentic self that is seeking to emerge.

Integrating the Head:

Integrating the 'head' involves developing the intellectual and cognitive dimension of the participants, something which traditional forms of education for sustainability are known to do. The focus, however, in alternative programs, is on the interconnectedness of things, i.e., systems approach. According to Azuma et al. (2010), leading-edge learning programs challenged the mental models of the participant by fostering an emergent understanding of the world which recognises the interconnectedness of sustainability challenges. The programs also promoted critical thinking and reflection as well as fostered leadership and professional skills. Some programs also promoted peer learning as a transformational tool to help learners learn from each other’s feedback.

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Integrating the Hands:

Integrating the 'hands' involves providing the participants with hands-on learning opportunities. Azuma et al. (2010), notes that leading-edge programs implemented various forms of experiential learning opportunities, ranging from real-life projects to peer-learning activities. The real-life projects encouraged students to learn by doing, which would then allow them to learn from their errors and successes.

2.3.3. Guideline 3: Cultivating a safe and fertile space for self-learning to unfold itself

According to Azuma et al. (2010), leading-edge learning programs committed to creating a safe and conducive space for self-learning to unfold itself. The programs especially achieved this by fostering accountability – a sense of trust in the participants' capacity to organise themselves and their will to learn and participate or collaborate. The programs also fostered an inclusive and non-judgemental space where the participants could open their minds and hearts to connect with what matters to them. Most importantly, the programs provided basic tools (such as workshops, self-evaluation tools, international experience, coaches, facilitators) to facilitate the learning process.

2.3.4 Elements that informed the strategic guidelines.

Systemic and functional definition of sustainability:

How a program defines sustainability determines the type of approach (e.g. multidisciplinary approach) it will take in teaching and educating takes in terms of what they teach about sustainability. According to Azuma et al. (2010), all six the leading edge programs had a common ideology on how they defined sustainability. Their definitions all had systemic, holistic, and functional aspects to them. According to Azuma's et al. (2010), an example of a systemic and functional definition of sustainability is as follows:

In a sustainable society, nature is not subject to systematically increasing:

- concentrations of substances extracted from the Earth's crust,
- concentrations of substances produced by society,
- degradation by physical means, and in that society…
- people are not subject to conditions that systematically undermine their capacity to meet their needs.

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Furthermore, McFarlane & Ogazon (2011), suggests that an appropriate definition (i.e. functional and systematic and holistic in approach) for sustainability needs to facilitate the application of the three guiding pillars of sustainability (i.e. a flourishing environment, vibrant community, and equitable economy) in the following manner:

- **Flourishing Environment**: The definition needs to facilitate a mindfulness of the environment and deliberate actions that preserve the environment in all endeavours.
- **Vibrant Community**: The definition needs to facilitate the development of a pro-active and highly engaged community of people who promote sustainability and integrate it into their own lives, at work, and in their communities.
- **Equitable Economy**: The definition needs to facilitate the formation of an equitable economy where all individuals have access to essential resources for their survival and wellbeing.

The competencies of a change agent

Research shows that specifying the relevant competencies of change makers provides a good basis for a more effective curriculum design (Lotz-Sisitka, H. &Raven, G. (2009). Azuma et al. (2010), suggests that the below mentioned competencies can be translated into actual and transformative learning programs by applying the three above mentioned strategic guidelines that best serve the development of change agents.

- **An intuitive – emotional dimension (heart):** Where the individual has a sense of identity, self-awareness, a sense of connectedness (especially to their higher potential), and a sense of ownership to own life.
- **An intellectual – cognitive dimension (head):** Where the individual has a holistic and interconnected world view. They understand how society and the natural environment are related to one another, including how they interact to become unsustainable.
- **A physical – action dimension (hand)**: Where the individual has a strong motivation to achieve their vision of a sustainable future, equipped with the necessary professional and leadership skills to effect change.

Azuma's et al. (2010) framework, alongside its alignment with the critical realism approach, was also selected for this study because the competencies it lists as relevant for change agents for sustainability are similar to those the LLL initiative also seek to develop in their participants. According to the LLL (2016), the LLL initiative's co-curricular programme is grounded by four philosophies: namely, experiential learning, andragogy – adult learning

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theory, the pedagogy of hope and the intergroup contact theory. These are explained further in section 2.4. Therefore, in this study, the strategic guidelines for designing programs for change agents are used as a tool to assess the extent to which the LLL initiatives' program design best serves the development of change agents for sustainability.

2.4 The Listen, Live, Learn (LLL) Initiative

2.4.1 The institutional context in which the LLL initiative was introduced

The LLL initiative is flagship residence at SU with a co-curricular programme that provides an immersive experiential learning opportunity for students to live with, listen to, and learn from the 'other' (LLL, 2016). A group of eight diverse students (the intergroup) is placed in one of the 28 LLL themed houses where they share a common kitchen and bathrooms and are expected to invite guests and engage in conversations around their house themes (Kloppers et al., 2013). The house themes for the sustainability lot include food security, nature conservation, and water and waste management. According to Dunn-Coetzee & Fourie-Malherbe (2017), theme 'gurus' or mentors are appointed to each house to introduce the theme as well as guide the direction of the conversations around the theme.

These theme conversations are the focal point of the initiative for two reasons. Firstly, these theme conversations are means for students to make regular contact with 'the other' so as to reduce their stereotypes, biases and discriminatory attitudes about each other (Dunn-Coetzee & Fourie-Malherbe (2017). As per the intergroup contact theory, these lounge conversations can be seen as the 'common goal' whose attainment, in principle, necessitates regular engagements and requires an interdependent effort from the intergroup (Pettigrew, 1998).

Established in 2008, the initiative was explicitly formed to further drive transformation and inclusion at SU– a historically white university. According to Dunn-Coetzee & Fourie-Malherbe (2017), the LLL initiative was introduced at SU as one of the university's responses to the changing higher education landscape in South Africa. In the past, the South African higher education system primarily targeted and served the country's white minority ethnic group (Dunn, 2013). Today, universities across the country, including SU, "are now striving to ensure equitable representation of all South Africans in their student and staff components" (Dunn-Coetzee & Fourie-Malherbe. 2017).

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A growing body of knowledge indicates that building a new just and inclusive landscape in higher educations, especially in institutions with an exclusionary past (such as SU) requires more than "widening access to previously underserved groups and appointing black academics" (Dunn-Coetzee & Fourie-Malherbe, 2017, p. 64). According to Dunn-Coetzee & Fourie-Malherbe (2017), building a new just and inclusive landscape also requires a change in the "institutional culture and social climate" of the university. It is, therefore, with this need in mind that the LLL initiative was established.

Secondly, the lounge conversations are a space where guests (i.e., academics, experts, or civic leaders) and students challenge each other's world views as well as inspire each other to be more open-minded (Dunn-Coetzee & Fourie-Malherbe, 2017). Most importantly, these engagements are meant to awaken the students to their leadership potential, facilitate personal growth, and empower them to become agents of change (Dunn-Coetzee & Fourie-Malherbe, 2017). As change agents, LLL students are encouraged to use the knowledge gained during their participation to innovate and create sustainable solutions that contribute positively to social change in South Africa and the world at large (LLL initiative n.d.; Dunn-Coetzee & Fourie-Malherbe, 2017).

2.4.2 Philosophies guiding the LLL co-curricular program

According to the LLL (2016), the LLL initiative's co-curricular programme is grounded by four philosophies: namely, experiential learning, andragogy – adult learning theory, the pedagogy of hope and the intergroup contact theory. These four philosophies form the basis of what the LLL initiative is trying to achieve.

1. **Intergroup Contact Theory (ICT):** Based on the ICT the LLL initiative, as previously mentioned, envisages that the intergroup, i.e., students from different backgrounds, will come in contact with each other and have meaningful engagements which, in turn, are expected to effectively reduce prejudices within the intergroup and cultivate social cohesion. The initiative conceptually integrates ICT by promoting three values:
    - **Diversity (**Listen): where the initiative is committed to fostering an inclusive space by embracing all forms of diversity.
    - **Belonging in a community** (Live): where the initiative is committed to fostering an environment where everyone is free to express themselves authentically.

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- **Pursuit of knowledge** (Learn): where the initiative is committed to creating a space where experiential learning and disciplinary knowledge are equally promoted.

2. **Experiential learning:** The initiative envisages that the experiential learning opportunity will challenge the students to derive meaning from their direct experiences by being reflective, analytical, decisive, and solution or action-oriented.
3. **Andragogy:** The initiative envisages that the students will design their own learning experiences from the experiential learning process by determining the skills and behaviours they would like to acquire from the co-curricular offerings.
4. **Pedagogy of Hope:** The initiative envisages that the students will be encouraged and inspired to contribute to positive social change, i.e., become change agents.

2.4.3 LLL graduate competencies

With the above-mentioned philosophies in mind, the LLL's co-curricular program seeks to develop competencies in three main areas:

- **An enquiring mind:** Where an individual has the ability to integrate and synthesize interdisciplinary knowledge and apply systems thinking to existing problems. This competency can be seen as an equivalent to the 'intellectual – cognitive dimension' competency that Azuma et al. (2010) lists as one of the competencies for change agents. In both cases, the idea is to communicate the interconnectedness of knowledge as well as the systems and processes within which society functions.
- **Self-aware/well rounded individual:** Where an individual has interpersonal and intrapersonal skills that enable them to engage with the world from a place of wholeness. This competency can be seen as an equivalent to the 'intuitive – emotional dimension' competency that Azuma et al. (2010) lists as one of the competencies for change agents. In both cases, the idea is to help students become best versions of themselves from an emotional intelligence perspective.
- **Agency development:** A state where an individual is socially engaged and an active participant in change-oriented initiatives. This competency can be seen as an equivalent to the 'physical – action dimension' competency that Azuma et al. (2010) lists as one of the competencies for change agents. In both cases, the idea is that the individual will be motivated and action oriented with a sense of responsibility and obligation to make a positive impact.

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2.4.4 The LLL initiative's challenges

Several studies have been done on the LLL initiative, most of which evaluated the initiative's success in reducing stereotypical attitudes and achieving social cohesion among the students (Dunn, 2013; Kloppers et al., 2013; Smorenburg & Dunn, 2014). Findings from these studies regarding the LLL's impact are inconclusive because LLL participants have been shown to be a naturally self-selecting group of people who probably already had low levels of stereotypical attitudes (Dunn-Coetzee & Fourie-Malherbe, 2017). This inherent selection bias can be seen in the selection process where a select few former LLL participants are chosen to participate in the selection process to select new candidates based on 1) their potential to learn from and contribute to the LLL; 2) previous involvement in other on or off-campus communities; 3) diversity in terms of race, gender, field of study, nationality and background (LLL, 2016).

Despite the several studies done on the LLL initiative, it seems that there haven't been subsequent improvements to build the initiative's capacity to achieve its objectives. In 2019, a motion to remove the LLL village (a large community of LLL houses that accommodate majority of the LLL students) from the LLL program and convert it into a senior residence (similar to other residences on campus) was rolled out by the university due to low interest in the initiative in the past two years (van der Mescht, 2019). Kloppers, Director at the Centre for Student Communities, stated the following, "the LLL programme overall has struggled in the last two years to get the desired numbers to run the programme successfully for roughly 200 students that form part of the programme. […] In other words, there are not enough applicants that meet the qualifying LLL standards to make sure that the programme starts the year in a way that can ensure success" (van der Mescht, 2019).

This decision was countered by a Memorandum of Grievances prepared by a group of student protestors who were rejecting the universities motion on "administrative and humanitarian grounds" (van der Mescht, 2019, p. 1). During the protest, Zizo Vokwana, SASCO chairperson, stated the following, "LLL is a black space [and] we will not allow it to be destabilised. That is our space, and black students apply there because it is our home. It is very important for white students to have their own culture, to us as well it is very important to have our own culture on this campus" (van der Mescht, 2019, p. 1).

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However, despite the challenges that the initiative is experiencing, with the proper tools and support, the LLL still has the potential to become an effective and influential campus initiative. Kloppers et al. (2013), said this about the LLL initiatives potential: "If the LLL programme is to realise its aim of having a significant impact within the Stellenbosch student population, this effort must move from being an innovation or an interesting initiative to being a reform. Being a reform requires structural change, rethinking roles and relationships, and generally re-engineering student life so that these learning communities are appropriately supported" (Dunn-Coetzee & Fourie-Malherbe, 2017, p. 65)

2.5 Chapter summary

This chapter presented an overview of the evolution of education for sustainability globally and in South Africa. Azuma's et al (2010), framework for the three strategic guidelines for the program designs that best serve the development of change agents was presented and selected as the guiding framework for this study. The guidelines in the framework were aligned with the design of the LLL program.

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Chapter Three

Methods and materials

3.1 Research design and paradigm

Research design is a general plan of how the researcher will answer the research question (Saunders et al., 2009). The research approach used in this study is explanatory; where in this case, one aspect of the LLL initiative – change agency, was studied to explain the extent to which the LLL's program design best serves the development of change agents for sustainability. The critical realism paradigm guided the researcher's mode of enquiry.

Critical realism (CR), in relation to sustainability education, offers a unified approach to social and natural sciences while at the same time recognising the real but different structure and processes inherent within the two domains (Huckle, 2004). In this way, it facilitates an understanding of the: (1) "relational and systemic nature of the natural world" and (2) "ways in which social institutions facilitate or undermine the interaction between human and non-human nature that foster sustainability" (Huckle, 2004, p.38). Embedding the CR philosophy in sustainability education is transformative because it challenges both the underlying structural conventions underpinning the current education systems and cultural factors that hamper the societies' inclination toward sustainability. Accordingly, it aims to communicate "how society is embedded in nature [as well as the understanding of] the forms that nature takes in specific social circumstances" (p. 38), and it can also provide opportunities for praxis (Huckle, 2004).

According to Fletcher (2017), critical realism is an alternative to positivism and constructivism that draws methodological elements from both in terms of ontology (the nature of reality) and epistemology (the knowledge of reality). In critical realism, "ontology is not reducible to epistemology" (Fletcher, 2017, p. 182). For this reason, Fletcher (2017), argues that it is not associated with any particular methodology; rather, it "functions as a general framework for research" (p. 182). CR enables both a theory-driven and researcher-driven analytical process is particularly useful for analysing social phenomena (i.e., events or problems) and suggesting solutions for social change because it enables the researcher to engage with transdisciplinary theories from to facilitate a deeper causal analysis with a more accurate explanation (Fletcher, 2017).

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In this study Azuma's et al. (2010), theoretical framework was used because:

- It is rooted in the CR philosophy, which is essential for transformative sustainability education programs for change agents.
- Based on the knowledge that CR is a theory driven analytical process (Fletcher, 2017), Azuma's et al. (2010) framework provides a comprehensive theoretical structure for organising and analysing the data in this study to get an indication on learning outcomes of students as sustainability change agents. According to Fletcher (2017), a theory-driven and researcher-driven analytical process enables the researcher to "find the best explanation of reality through engagement with existing research about that reality" (p. 186). In this case, the 'reality' is the development of change agents through the LLL program; the 'existing research about that reality' is Azuma's et al. (2012) study on the program design of sustainability programs that best serve the development of change agents.

3.2 Population and sample

The target population, defined as the population on which a research study focuses (Saunders et al., 2009), were all the students placed in the LLL program for the 2018 academic year at SU. As per Dunn-Coetzee & Fourie-Malherbe (2017), the students came from different backgrounds, ethnic groups, were studying different courses, and were senior students. From the target population, a sample – a subgroup of the population, was chosen to be involved in the research. These students lived in houses called the sustainability lot by the LLL program. The sample was made up of the 12 students (n=12) who completed the final reflections questionnaire and whose house themes were classified under the sustainability lot, namely: food security (n=3), water and waste management (n=3), and nature conservation (n=6).

3.3 Data collection

According to Saunders et al. (2009), data are "facts, opinions and statistics that have been collected together and recorded for reference or analysis" (p. 245). Data is either in numbers (quantitative) or language (qualitative) (Saunders et al., 2009). Data collection for this study was done by acquiring access to secondary data from the LLL coordinator in 2018. According to Saunders et al. (2009), secondary data is data that has "already been collected for some other purpose" (p. 256).

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This study made use of secondary data. Interviews with the students could not be conducted due to time constraints as most of them were writing exams at the time of the study. The LLL coordinators collected the data using a web-based (google forms) self-administered questionnaire called the final reflections self-assessment (see Appendix A). The questionnaire was developed by the LLL coordinators as part of the LLL monitoring and evaluation regimen to assess the participant's involvement within the LLL initiative throughout the year. The questionnaire included questions that allowed the participants to reflect on their level of participation and contributions to their respective houses. This study only used questions from the final reflections self-assessment questionnaires (see Table 3.1) whose answers would best answer the objectives of this study.

The questions used to determine the extent to which the LLL co-curricular integrated heart, head, and hand for a holistic learning process that supports learners to overcome mental barriers, were an indication of what students have learned in terms of: agency, self-awareness, and enquiring mind. The lessons they learned were assumed to have been acquired through peer learning, house dinner conversations, as well as other theme house related activities and projects. Finally, the questions used to determine the extent to which the LLL initiative cultivated a safe and fertile space for self-learning to unfold itself gave an indication of what the students thought could be done to improve their experience in the program. The things that the students indicated would make their experience better were assumed to be things that the LLL initiative needed to do to cultivate a safer and more fertile space for self-learning to unfold itself.

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Table 3.1 The Live, Listen and Learn final reflection questions used for this study

Strategic guidelines for sustainability program designs	**Study objective**	**LLL final reflection questions used in this study**	**Data type and analysis**
Guideline 1:	To ascertain how the students in the LLL sustainability lot engage or interact in their respective houses	How many house dinners have you helped prepare?	Quantitative (frequency of events reported)
Using the learner's 'self 'as a primary instrument for learning		How many house dinners have you attended?	Quantitative (frequency of events reported)
		How many dinner guests has your house hosted? (friends not included)	Quantitative (frequency of events reported)
		How often does your house do a clearing (lounge theme conversations)?	Quantitative (measured as 'never', 'once a month' 'once a semester', 'twice a month', 'twice a semester')
		Do you initiate group activities for housemates? If yes, please list some of the activities.	Quantitative (yes or no)
		Do you attend things your housemates invite you to? If no, please explain why.	

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Guideline 2: **Integrating heart, head, and hand for a holistic learning process that supports learners to overcome mental barriers**	To ascertain what students in the LLL sustainability lot have learned in terms of agency development, self-awareness, and enquiring mind.	What have you learned about an enquiring mind and do you plan to use any of these skills after your time in the LLL Initiative?	Qualitative (thematic analysis)
		What have you learned about self-awareness and do you plan to use any of these skills after your time in the LLL Initiative?	Qualitative (thematic analysis)
		What have you learned about agency development and do you plan to use any of these skills after your time in the LLL Initiative?	Qualitative (thematic analysis)
Guideline 3: **Cultivating a safe and fertile space for self-learning to unfold itself**	To ascertain what students in the LLL sustainability lot think can be done to improve their experience in the program.	In regard to the experiences with your housemates, what is working? What is not working? what have you learnt so far? And how can you as a house build on what is working?	Qualitative (thematic analysis)

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3.4 Data analysis

Quantitative data

As seen in Table 3.1, in responses to the questions selected for Objective 1, student listed the number of times they had that interaction. The frequency of dinner preparations, dinner attendance, dinner guest hosted, clearing sessions, and other activities were summarised to describe how the students in the sustainability lot interact with one another. For example, the questions used to determine the extent to which the students used self as a primary instrument for learning were an indication of how the students engaged in the house themes. So, the frequency of engagement among the students in their respective houses was an indication of the students' commitment to the learning process. Furthermore, in the number of times that the students had engaged, the context under which they were engaged was an indication of the type of knowledge transfer that could have possibly occurred. If the students were gathered for a house dinner conversation in the presence of their house dinner guest, it was assumed that the students learned something about their house themes.

Qualitative data

According to Saunders et al. (2009), coding – which involves searching for categories, themes or patterns across a data set, is the basic technique for analysing qualitative data. Sources to derive names for categories and themes include: (1) terms that emerge from data, (2) actual terms used by participants ('in vivo' codes), or (3) terms used in existing theories and the literature (Saunders et al., 2009; Braun and Clarke, 2006). The terms that emerged from the data and had the most meaningful relation to the 'actual' terms existing in the three strategic guidelines (Table 3.2) were used as themes to describe the learning outcomes of the students.

Essentially, this study identified the presence of concept similarities between Azuma's et al. (2010) study on sustainability education for change agents and the LLL final reflections questionnaires. For example, a response like "*I have learned to have more meaningful conversation this year, and have made friends I least suspected, who possess completely different views than my own. Allowing me to grow and constantly question and evaluate my own beliefs. I plan to continue to be open minded when meeting new people, especially those who are different from me"* was coded as self-awareness. The data was first coded by the candidate. The codes were reviewed by the supervisors and disagreements were resolved.

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Table 3.2. Themes existing in the three strategic guidelines framework for the design of sustainability programs.

Strategic guidelines for sustainability program designs	**Actual terms existing in the three strategic guidelines framework**
Guideline 1: Using the learner's 'self 'as a primary instrument for learning	Driven by a vision of a better future for themselves and others Self-motivated Committed and have a sense of ownership and responsibility to their own learning process
Guideline 2: Integrating heart, head, and hand for a holistic learning process that help learners to overcome mental barriers	Head: Intellectual-cognitive- theory dimension Heart: Emotional-intuition-self dimension Hands: Physical-experiential-action dimension
Guideline 3: Cultivating a safe and fertile space for self-learning to unfold itself	Foster trust in participants' potential and will to learn Foster participation/collaboration/ peer learning Foster a non-judgmental, diverse and inclusive space Provides basic tool to facilitate learning

3.5 Data credibility

Since this study made use of secondary data, to ensure data credibility, i.e., the data's precise suitability to answer the study's research question and meet the research objectives, validity (internal), and reliability, were assessed (Saunders et al., 2009). According to Saunders et al. (2009), "the reliability and validity ascribed to secondary data are functions of the methods by which the data were collected and the source" (p.274). The source of the data refers to the authority and reputation of the source from which the data set originated (Saunders et al., 2009). For example, survey secondary data from well-established and internationally renowned institutions is likely to be reliable and trustworthy.

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3.6 Ethical considerations

Ethics in research moderate the researcher's moral responsibility to the human and non-human entities involved in the study as well as the discipline of science, i.e., to be accurate and honest throughout all the phases of the research process (Saunders et al., 2009). In this study, the researcher gained access to secondary data form the LLL coordinator after obtaining ethical clearance (reference number IRPSD-913) from the Research Ethics Committee (REC) at SU. The participants' data (i.e., identities) were protected against unauthorised access, and confidentiality was maintained throughout the research process (e.g., data collection, analysis, storing and reporting).

3.7 Study scope and limitations

The scope of this study only involves the participants (n=12) living in the sustainability lot who completed the final reflection questionnaire. This means that the opinions and responses of the participants living in other house themes were not considered in the analysis. Furthermore, this study also solely focused on the LLL initiative's change agency outcome. As an explanatory study, it sought to gain new insight on the LLL initiatives program and learning outcomes of the students who enrolled in it. Therefore, findings for this research cannot necessarily be used to make generalisations for phenomena outside the LLL initiative.

Due to the unavailability of the students to engage in focus group discussions, this study made use of secondary data. As a result, the researcher had no control over the data collection process, especially the data collection tools (i.e., questionnaires) – how they were designed and structured. The questionnaire questions were open-ended (which allowed the respondents to give answers in their own way, be it in number or text) and sometimes long – with one question requiring multiple answers (see Table 3.1). Although open-ended questions allow for subjective and in-depth answers, it is generally difficult to conduct in-depth questioning via surveys, and they also run the risk of being misinterpreted by the respondents (Saunders et al., 2009). Especially since the researcher does not always have control of the conditions in which the respondents complete the survey – responses may be superficial, and the response rate low. Therefore, the information collected in the surveys was limited to the initial purpose, which then affected how the data was presented as well as the relevance and usefulness to this study.

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3.8 Chapter summary

Chapter three presented the methods for this study. The chapter outlined the questions selected from the LLL final reflections survey used to answer the objectives of the study. In addition, the methods of data analysis were also outlined.

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Chapter Four

Learning activities and outcomes in the LLL initiative

4.1 Introduction

This chapter begins with a description of the participants living in the sustainability lot that partook in the final reflections self-assessment. It is then followed by the results which are presented as per the three objectives: (1) how students engage or interact in their respective houses; (2) what students have learned in terms of: agency, self-awareness, enquiring mind; (3) what students think can be done to improve their experience in the program.

4.2 Results

4.2.1 Characteristics of respondents

As per Table 4.1, a total number of 12 students living in the LLL sustainability lot partook in the final reflections self-assessment. The students living in the sustainability lot (n=12) were made up of three students from the food security house, six from the water and waste management house, and three from the nature conservation house.

Table 4.1 The number of LLL participants living in the sustainability lot who partook in the 2018 final reflection self-assessment.

Respondent number	House theme
R1	Food security
R2	Water and waste management
R3	Nature conservation
R4	Water and waste management
R5	Food Security
R6	Nature conservation
R7	Nature conservation
R8	Nature conservation
R9	Nature conservation
R10	Nature conservation
R11	Food security
R12	Water and waste management

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4.2.2 Objective 1: How students engage or interact at the houses

Understanding how the students engage with one another and the frequency of these engagements indicates the level of commitment and ownership of the learning process that the LLL participant in the sustainability lot had. Assuming that the academic year is approximately 10 months, the idea is that the frequency of engagement in house theme related activities would at least be once a month. The LLL participants had opportunities to engage with one another through: helping with house dinner preparations, house dinner attendance, house dinner guest conversations, clearing sessions, honouring housemates invites to activities, and initiating activities with their housemates. Information on the content of these interactions were not available, the questions measured how often the event occurred.

Table 4.2 Frequency of engagement at the LLL house

Activity	Number of respondents	Percentage (%)
Dinner preparation		
None	3	25,0
Once	5	41,7
Twice	3	25,0
More than twice	1	8,3
Dinner attendance		
None	2	16,7
Once	3	25,0
Twice	1	8,3
More than twice	6	50
Dinner guests hosted (friends excluded)		
None	4	33,3
Once	5	41,7
Twice	2	16,7
More than twice	1	8,3
Frequency of clearing sessions		
Never	3	25,0
Once a semester	8	66,7
Once a month	1	8,3
Total	12	100

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House dinner preparations

After one year of being a part of the LLL initiative, 25% (n=3) of the participants had not participated in preparing communal house dinners, while 41.7% (n=5) of the participants helped prepare at least one meal and 25% (n=3) at least two meals. In a 10-month academic year, the majority of the students only helped with house dinner preparations once or twice, which is quite low.

Dinner attendance

When asked how many dinners the participants attended, 16.7% (n=2) indicated they did not attend any, 25% (n= 3) attended at least one house dinner, 50% (n=6) attended house dinners more than twice. Therefore, in a 10-month academic year, the majority of the students attended house dinners more than twice. More people attended house dinners than helping with dinner preparations; however, the frequency at which the students participated in the house dinners is way less than 50%.

Dinner guests hosted

As seen in Table 4.2, 41.7% (n=5) of the participants indicated that their house had hosted at least one dinner guest, while 33.3% (n=4) indicated that their house did not host dinner guests. Only one participant (8.3%) indicated their house hosted more than two dinner guests. This means that in a 10-month academic year, about 80% of the time, the students were not officially engaging in knowledge transfer conversations on their house theme with guests who were experts on the topics.

Frequency of clearing sessions

A clearing session is when students living in the same themed house reflect on what is working for them and what is not. As per Table 4.2, 66.7% (n=8) of the participants indicated that they had clearing sessions once a semester. Another participant indicated their house conducted clearing sessions once a month 8.3% (n=1), and 25% (n=3) indicated that they had never attended a single clearing session. Clearing sessions are an opportunity for the participants to reflect what is working and what is not working for them as well as to decide on a way forward to improve their circumstances. Majority of the participants thought of clearing sessions as an opportunity to resolve conflicts, instead of an opportunity to reflect, peer learn and grow. Therefore, depending on whether they had conflicts or not, clearing sessions would be initiated on that basis.

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Table 4.3 Initiation of activities and attendance to activities invited by housemates.

Do you attend things your housemates invite you to?	**Number of respondents**	**Percentage (%)**
Yes	9	75,0
No	3	25,0
Do you initiate group activities for housemates?		
Yes	6	50,0
No	6	50,0

As per Table 4.3, 75% (n=9) of the respondents that indicated that they attended activities that their housemates invited them to and (50% (n=6)) indicated that they initiated activities with their housemates. The activities they initiated included: (1) personal activities where they studied together and went on ice cream adventures; (2) social activities where the individuals participated in a Khayamandi project and attended a children foundation event; and (3) physical activities where they went out hiking. This shows that most of the participants' engagements revolved largely around activities that were not related to their respective house themes.

4.2.3 Objective 2: What students have learned in terms of: agency, self-awareness, enquiring mind

During the course of the LLL program, the students are expected to learn and develop competencies in three main areas: enquiring mind, self-awareness, and agency development. These deductive codes were based on the Azuma and colleague's theoretical framework that guided the data analysis as explained in the methods. Therefore, understanding what the students learned in terms of self-awareness, enquiring mind, and agency development gives an indication of how the LLL co-curricular program developed integrated heart, head, and hand for a holistic learning process that supports learners to overcome their mental barriers indicated.

Enquiring mind

As per the LLL initiative framework, having an enquiring mind involves being a problem solver, being intellectually curious, as well as having complex and interdisciplinary systems thinking. The respondents, on the other hand, indicated that they learned that an enquiring mind has to do with being open minded, understandable, committed to life-long learning, and the importance or value to having an enquiring mind.

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Being open-minded

Some participants learned that being open-minded means being willing to challenge constructs about self, others, and the world. For example, one respondent reported that their willingness to have meaningful conversations with new and different people lead to the inceptions of new friendships. While another reported that they acquired new disciplinary knowledge.

> *"I have learned to have more meaningful conversation this year, and have made friends I least suspected, who possess completely different views than my own." [R1]*
> *"I have learned more about other disciplines." [R3]*

Being understandable

Some participants indicated that they learned how to be more intentional when engaging with people especially with an intention to gain an understanding of that person.

> *"I have learned [..] how to engage with people that have a different mindset as myself." [R3]*
> *"Being an understanding person." [R8]*

Life-long learner

Alongside being open minded, some of the participants indicated that having an enquiring mind has a lot do with being curious and an eagerness to learn. For example, one participant noted that having an enquiring mind means that they will continuously question and evaluate their beliefs because it is an important aspect of life-long learning.

> "*I plan to continue to be open minded […] allowing [myself] to grow and constantly question and evaluate my own beliefs." [R1]*

Importance of having an enquiring mind

There was a consensus in the respondent's answers that an enquiring mind was important because it opened them up to finding life lessons in everyday living and learning to accept the differences in people.

> *"When actively engaging- possessing an inquiring mind you can learn so much in an average day, than simply living without being intentional in conversations." [R1]*

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> *"I have learnt that the answers to the question we didn't even know we had, are everywhere around us." [R9]*

Self-awareness:

A self-aware or well-rounded individual as per the LLL framework is one that mainly has good interpersonal and intrapersonal skills (see Appendix B). The respondents reported that they learned that self-awareness has to do with being thoughtful and reflective, that it is an intentional and continuous process as well as its importance.

Thoughtful and/or reflective

Most respondents indicated that self-introspection and challenging constructs about one's self was an important aspect of self-awareness because it allowed them to manage their emotions and focus on what mattered. Another indicated that self-awareness was important because it enabled a person to be mindful of their actions and the implications these actions may have on other people.

> *"I have learned to be more aware of my own speech and the effect it can have on others in terms of ambiguity and subsequent offense." [R1]*
>
> *"I have learned that sometimes I need to change how I approach looking at myself to gain a grasp of a bigger picture of who I am." [R7]*

The importance of self-awareness

Some respondents indicated that they learned about the importance of self-awareness. One respondent indicated that without it, one cannot make the necessary changes that enable it to grow. While others indicated that it facilitated the process of making sound decisions.

> *"[It helps to] make improvements on the necessary areas. [R2]*
>
> *This allows you to perform better decision making as well as take the necessary steps when it comes to self-care." [R5]*
>
> *"I have learned to accept and deal with my feelings better." [R10]*

Intentional and continuous process

Some respondents indicated that they learned that self-awareness was an intentional and continuous process.

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"I have learnt that it's an ongoing process. It is something that I need to be intentional about; and prioritize 'me time' to reflect efficiently." [R4]

"That sometimes we feel so strongly about a certain topic but can't really trace back why it is that we feel that way." [R11]

Agency development:

As per the LLL initiative framework, agency development involves being socially engaged, social entrepreneurship as well as being an active participant as described in the methods. Some respondents reported that they learned that agency development was about thinking independently and connecting with people. While two others indicated that they did not even understand the concept of agency development.

Independent thinking:

Some respondents noted that independent thinking was an important aspect of agency development. For example, one respondent reported that for her to make an impact, it is important that her voice stand out from the crowd.

"I have learned how not to be part of a crowd but, to ensure my voice can be heard in the larger context." [R7]

Connecting with people

Due to the complexity of sustainability challenges, collaboration is key to make things more sustainable. Most of the respondents indicated that connecting, networking, and collaborating with people was an important lesson they learned about agency development.

"I have learnt that it's important to connect with different people in various fields and backgrounds. After graduating from university, networking, and the people you network with, become an important key to finding your way about." [R2]

"I have learnt or reaffirmed my belief that integration and collaboration are vital." [R3]

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4.2.3 Objective 3: What students think can be done to improve their experience in the program

Understanding what the students thought could be done to improve their experience in the program gives an indication of the LLL's commitment to cultivating a safe and fertile space conducive enough for learning to unfold itself. Azuma et al. (2010) notes that program design that best serve the development of change agents are committed to creating a supportive space for learning to unfold itself by: (1) fostering trust in the participants' potential and will to learn (2) fostering participation, collaboration, or peer learning (3) fostering a non-judgmental, diverse and inclusive space (4) and providing basic tools (such as facilitators) to facilitate the learning process. In this study the respondents noted that their experience in the LLL program can be improved through proper planning, conflict resolution, and improved communication.

Planning

Part of being an LLL participant requires that housemates collaborate on a house theme related project. However, one respondent noted that planning and executing these house theme projects was often a challenge. The respondent suggested setting smaller attainable goals with an action plan:

> *"We all have not kept each other accountable when it came to projects we discussed at the beginning of the year. I think in the future we should have set smaller attainable goals instead of thinking about tons of things without having a plan of action." [R1]*

Conflict resolution

The respondents indicated the challenge of living with others. They mentioned that due to differences conflict arose in the houses. According to them, there should be more opportunities to resolve such, especially during the clearing sessions. The students suggested that training in conflict management (i.e., interpersonal and intrapersonal skills) can improve and foster better collaboration, peer-learning, as well as improve conflict resolution among the participants.

Improved communication

The learners requested for improved communication between facilitators, students and house leaders.

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I would recommend. Better communication with learners throughout the year. Spacing out self-assessments which would add value to the process of the assessment itself. I found the open mind exercise rushed due to my limited time. If it had been spread throughout the semester it would've provided time for self-reflection and exercising what was leaned. [R1]

Better communication from the LLL leaders. This includes better grammar and spelling in emails and forms. [R11]

4.3 Chapter summary

The chapter presented the findings from this study as per the study objectives. The LLL participants had opportunities to engage with one another through house dinners, clearing sessions and other activities. However, the interactions were irregular and not necessarily linked to their house themes. The students also reported what they learned in term of self-awareness, enquiring mind, and agency development. The respondents suggested improved planning and communication, and conflict resolution as recommendations for improving the program.

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Chapter 5

Discussion, conclusion, and recommendations

5.1 Introduction

Experiential learning programs, such as the LLL initiative, are gaining traction in education for sustainability as they have been shown to be more effective in developing change agents for sustainability. This section considers the four objectives of this study and premises the discussion on the first three objectives of the three strategic guidelines for the learning program design for sustainability change agents in Azuma's et al. (2010).

- Strategic guideline 1: Using the learner's 'self 'as a primary instrument for learning
- Strategic guideline 2: Integrating heart, head, and hand for a holistic learning process that supports learners to overcome mental barriers
- Strategic guideline 3: Cultivating a safe and fertile space for self-learning to unfold itself

5.2 Discussion of the results

5.2.1 Objective 1: How students engage or interact at the houses

Quality engagements through house projects and activities are some of the ways in which the LLL seeks to achieve their two objectives, fostering social cohesion and developing agency. As per the intergroup contact theory, the house dinner conversations with expert guests can be seen as the 'common goal' whose attainment necessitates regular engagements and requires an interdependent effort from the intergroup (Pettigrew, 1998). The findings in this research revealed that by the end of the year, the majority of participants had not engaged with each other through the mandatory theme house activities. The participants especially did not engage enough in the house dinners conversations with the expert dinner guests. This can be interpreted to mean that the participant did not learn a lot on their house themes, i.e., food security, water and waste management, and nature conservation. In fact, some of the participants indicated that some of the house conversations they had with a guest were not even related to their house themes. Instead, the student's engagements were mostly casual, revolving around occasional personal activities such as ice-cream adventures, studying together, hiking, and social activities such as attending a children foundation event.

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Therefore, by virtue of living under one roof, LLL participants had constant contact or engagements with one another, however, these engagements were not always 'quality' engagements where, for example, the dinner guests (i.e., academics, experts, or civic leaders) and students challenged each other's world views on their house theme as well as inspired each other to be more open-minded (Dunn-Coetzee & Fourie-Malherbe, 2017). The lack of these regular theme house conversations with expert house theme guests makes it challenging to fully accept that indeed the students engaged in transformative conversations that awakened their leadership potential and empowered them to become agents of change.

The LLL program, much like other the leading-edge learning programs in Azuma's et al. (2010) study, is student centred. This means that the extent of learning depends on the students' motivation, commitment, and ownership of the experiential learning process. Accordingly, the selection process to find students who presumably had the ability to self-organise in order to learn from and contribute to the LLL community was rigorous. The selection process involved lengthy program application forms which needed to be supported with motivation letters. To ensure that successful participants had the motivation and will to commit to the learning process and get the most out of it, the initiative further issued learning contracts. In the learning contracts, the participants were required to identify the skills and behaviours they would like to develop and acquire from the co-curricular as a form of accountability and assurance of the individual's ability to use 'self' as the learning instrument. Accordingly, the lack of frequent and quality engagements on the house theme activities makes it difficult to accept that the students fully used 'self' as an instrument of learning' – a component which, according to Azuma et al. (2010), underpinned the success of the program design of leading-edge programs.

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5.2.2 Objective 2: What students have learned in terms of: agency, self-awareness, enquiring mind

According to Azuma's et al. (2010), sustainability programs that best serve the development of change agents for sustainability integrate the development of competencies in three areas: intellectual-cognitive dimension (head), emotional-intuition dimension (heart), and experiential-action dimension (hand) (Azuma's et al., 2010). As mentioned in chapter two, the three competencies that the LLL seeks to develop – 'an enquiring mind', 'well-rounded individual', and 'agency development' can be seen as the equivalent of 'head, heart, and hand', respectively (as listed in Azuma et al. (2010) framework).

Many of the LLL participants indicated that they gained valuable lessons (which included being open-minded, reflective, and independent thinking to name a few presumably from exposure and engagements with their housemates. However, it is unclear how the LLL initiative, as an institution, objectively contributed to the development of the LLL three competencies – 'self-awareness', 'agency development', and 'inquiring mind'.

Integrating 'head' means transferring or teaching sustainability knowledge from a critical realist philosophical or an emergent understanding (Azuma et al., 2010). It also involves promoting critical thinking as well as developing the participant's leadership skills (Azuma et al., 2010). Regarding the LLL, Dunn-Coetzee & Fourie-Malherbe (2017), theme 'guru's' or mentors were supposed to be assigned to each house to introduce the theme to the participants as well as provide guidance on the direction that the theme conversations between the participant's expert dinner guests. However, there is no indication that these theme gurus or mentors were actually appointed. This could explain why the lessons that the participants learned in terms of an enquiring mind do not closely align with those associated with the intellectual-theory dimension (head) in Azuma's et al. (2010) framework.

Theoretically, the theme guru's and the theme conversations with the expert guests would have played a huge role in teaching the participants about their themes and how they are all connected to sustainability as well as their roles in the effecting change. Instead, the participants indicated that they learned that an enquiring mind has to do with being open minded, intentional, and being committed to life-long learning. Not only do these lessons not closely align with those in Azuma's et al. (2010) framework, they also don't align with LLL itself seeks to teach regarding an enquiring mind. That is, enabling the participants to become

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problem solvers with capability to have complex and interdisciplinary systems thinking approach to problems (among other things – see Appendix B). Furthermore, it is possible that the lack of theme gurus or mentors contributed, in part, to the participants' minimal commitment to the experiential learning process, as seen the low number of dinner guests invited, low number of participation in the ordinary theme related activities (see Table 4.2).

Research suggests that integrating 'heart' into sustainability education approaches involves appealing to the individuals' conscience, developing dispositions of a higher moral order, as well as helping the individual master their internal barriers such as the three voices of judgement, cynicism, and fear, all of which prevent them becoming change agents (Kollmuss & Agyeman 2002; Azuma et. al., 2010; Podger et al., 2010). Although there was no indication of how LLL co-curricular facilitated the development of the students' self-awareness competency, the lessons that the participants learned from the LLL program, to a small extent, aligned with those in Azuma's et al (2010) framework as well as those that the LLL envisaged to develop (see Appendix B). The participants reported that they learned that self-awareness has to do with being thoughtful and reflective, that it is an intentional and continuous process as well as its importance. However, the lessons they learned are not robust enough to help them overcome their internal barriers and adopt high moral dispositions necessary for bridging the mental gap between the possession of sustainability knowledge and the display of pro-sustainability behaviours.

According to Azuma et al. (2010), integrating 'hand' involves learning by doing through real-life projects in order to gain the necessary leadership skills to effect change. On the other hand, the LLL describes agency development as developing individuals to be socially engaged and active participants in change oriented initiatives. As per the LLL initiative, individuals can be thought of as active participants if they exhibited the confidence and skills to convene gatherings, invite house dinner guests, and add value to the house (see Appendix B). The participants, on the other hand, indicated that they learned that agency development had to do with thinking independently and connecting with people. While two others indicated that they did not even understand the concept of agency development.

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5.2.3 Objective 3: What students think can be done to improve their experience in the program

According to Azuma et al. (2010), a safe and fertile space is necessary for learning to unfold itself. Programs can do this by fostering a sense of trust in the participants' capacity to organise themselves and their will to learn and participate or collaborate. Programs should also foster an inclusive and non-judgemental space where the participants can open their minds and hearts to connect with what matters to them. Most importantly, the programs should provide basic tools (such as workshops, coaches, facilitators, to name a few) to facilitate the learning process.

Theoretically, the LLL program envisages to create an inclusive and non-judgemental space (as it is evident the values it promotes, refer to chapter two). However, practically, the participants indicated that conflict management is a key area of improvement. The participants also indicated that planning for their house related activities was a challenge and support and guidance from the LLL initiative would have improved their LLL experiences.

As mentioned earlier, Dunn-Coetzee & Fourie-Malherbe (2017), theme ‘guru’s’ or mentors were supposed to be assigned to each house to introduce the theme to the participants. Resources like theme guru’s, in this case, are tools that play a critical role in the development of change agents. However, there is no indication of the provision of basic tools such as the theme gurus, workshops, and seminars to aid the learning process. Therefore, it is also possible that the lack of basic tools such as theme gurus as well as resources for conflict management contributed to the participants’ minimal commitment to the learning process. Accordingly, the LLL students’ thoughts about what would have made their experience better indicated that the LLL’s commitment to cultivating a safe and fertile space for learning to unfold itself was not enough to best serve the development of change agents.

5.4 Recommendations

Based on the findings from this study, recommendations on how to the LLL can be an avenue with a strong platform for establishing a campus-wide culture on sustainability by developing change agents for sustainability are as follows:

- Providing the students with an adequate understanding on what the LLL is and the expectations that come with being a part of the program as well as providing incentives

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(i.e. certificates) to reward participation are some of the ways in which the initiative can encourage quality engagement. Most importantly, proving the students with an adequate understanding of what their house theme entail also can significantly encourage the them to engagement in quality conversations

- The initiative needs to provide tools such as workshops, facilitators, and real-life projects to ensure that the student competencies are objectively developed. The initiative can also invest in developing self-guided tools such as workbooks with the relevant content to enhance the learning process.

- Based on what the students indicated would improve their LLL experience, the LLL needs to ensure that they provide the participants with adequate support in terms of conflict management, planning for their house themed projects and activities.

- A comprehensive study with a mixed-method approach needs to be conducted to evaluate all the outcomes (social cohesion and change agency development) of the LLL initiative. Being the first of its kind at Stellenbosch University and in South Africa, more studies on the LLL initiative need to be conducted so that it can serve as a framework for establishing similar co-curricular programs that can be adopted and adapted by different residences at SU as well as across the South African Higher Education System. Additionally, further studies will also generate an in-depth understanding of how these learning communities can be structurally supported for them to yield the envisaged outcomes.

5.5 Conclusion

The purpose of this study was to explore what students in the sustainability lot learned as sustainability change agents after participating in the LLL program for a year. Azuma's et al. (2010) framework for the three strategic guidelines for the program designs that best serve the development of change agents for sustainability was used as this study's theoretical framework. The framework highlights three components of a program design that all work collectively to support the change agents journey: (1) enables the use of 'self' as an instrument for learning – thereby giving the learner an opportunity display a level of commitment and ownership learning process, (2) creates a safe and fertile space for learning to unfold itself – which, among

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other things, involves the provision of basic tools (such as workshops or facilitators) to facilitate learning, and (3) offering a curricular that helps the learners to overcome their mental barriers by developing competencies in three main areas: the intellectual-cognitive- theory dimension (head), the emotional-intuition-self dimension (heart), and physical-experiential-action dimension (hands).

This study drew from the participant experiences and reflections on being a part of the program in 2018. The findings in this study are relevant for improving the LLL initiatives' program design to ensure that it best serves the development change agents for sustainability. The finds are also relevant for the LLL initiatives ability to assist SU to facilitate continuity in establishing a university-wide culture by developing change agents. Firstly, concerning 'using self as an instrument for learning' – the study revealed that majority of the LLL participants had low-levels of commitment to and ownership of the learning process. Only a few participated in the LLL programs regularly. This shows that majority of the LLL participants had low-levels of commitment to and ownership of the learning process. Challenges such as the effects of inadequate conflict resolution and the absence of comprehensive guidance on their house themes, could have possibly had a negative impact on their level of commitment and ownership of the learning process. On the other hand, it is also possible that some students were not necessarily interested in the program to begin with, and instead were only interested in being placed in a university residence for the year.

Secondly, concerning the cultivation of a 'safe and fertile space' for learning to unfold itself. The study revealed that: (1) the LLL initiative did not do enough to cultivate inclusive and non-judgmental space where the participants felt safe and comfortable to express themselves in what mattered most to them. This manifested itself through the participants' inability to adequately manage and resolve conflicts. Arguably, this may have also contributed to the participants' low level of commitment to and ownership of the learning process. Furthermore, the LLL initiative did not provide basic tools such as workshops and theme gurus to offer support as well as facilitate the learning gurus or process, especially for the development of the LLL graduate competencies. Basic tools such as the theme mentors would have enhanced the experiential learning process, especially by providing interdisciplinary knowledge on food security, water and waste management, and nature conservation, upon which to base their house theme conversations and projects.

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Thirdly and related to the provision of basic tools is a 'curricular that helps learners overcome mental barriers' that prohibit them from taking action. Many of the LLL participants indicated that they gained valuable lessons (which included being open-minded, reflective, and independent thinkers). The participants also indicated that suggested improved communication, planning and conflict resolution can improve the LLL experience. While the LLL program design does produce change in students, whether this change will result in the display of pro-sustainability behaviour is yet to be examined.

Overall, the LLL graduate competencies were conceptually aligned competencies listed Azuma's et al. (2010) framework. However, the LLL's integration of the development of competencies into the program design (through the provision of basic tools such as mentors, workshops, self- guided work books) can be more robust. Future research needs to be conducted to evaluate the outcomes of the LLL initiative. Such studies can track students who participated in the program and the changes they have made in the real world.

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Appendix

Appendix A: 2018 Final reflections/assessment survey questions

1. Name (first and surname)
2. Student number
3. House theme
4. Preferred email
5. Enquiring Mind (rate yourself from a scale of 1-5)
6. What have you learned about an enquiring mind and do you plan to use any of these skills after your time in the LLL Initiative?
7. Self-Awareness (rate yourself from a scale of 1-5)
8. What have you learned about self-awareness and do you plan to use any of these skills after your time in the LLL Initiative?
9. Agency Development (rate yourself from a scale of 1-5)
10. What have you learned about agency development and do you plan to use any of these skills after your time in the LLL Initiative?
11. Did you discover other competencies that you wanted to develop throughout the year or moving forward? If so, please explain.
12. Do you feel like you met your mid-year goals? If not, please reflect on how you can achieve this with your time left.
13. Have you noticed any differences between the first semester and second semester?
14. What do you still hope to do as a house before the end of the year?
15. In regard to the experiences with your housemates, what is working? What is not working? what have you learnt so far? And how can you as a house build on what is working?
16. How does your presence in the house from first semester compare to now, how do you feel about it? Are you happy with how you interact with your housemates? Are you happy with the contributions you are making?
17. Are you struggling with anything (personal, between housemates, academically)? Have you learnt something about yourself through this experience/these experiences?
18. Going forward, what do you want to work on, improve, and/or develop personally?
19. How many house dinners have you helped prepare?
20. How many house dinners have you attended?

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21. How many dinner guests has your house hosted? (friends not included)

22. How often does your house do a clearing?
23. What has the impact of doing a clearing been? Or how has not doing a clearing impacted your house?
24. Do you initiate group activities for housemates? If yes, please list some of the activities.
25. Do you attend things your housemates invite you to? If no, please explain why.
26. How do you plan on using the LLL Initiative experience moving forward?
27. Is there anything you would like from the LLL team? Please be constructive with ideas and be specific.
28. Anything else you would like to share?

Appendix B: Learning outcomes or LLL graduate competencies:

Learning outcomes:			
1. An enquiring mind	Problem solver		Is able to identify a problem, apply knowledge and use available resources to find a solution
	Intellectually curious		Asks "why" questions and has internal motivation to learn
	Complex thinking		Understands multiple approaches and synthesises knowledge
	Pedagogy of hope		Applies knowledge to social problems and experiences
	Interdisciplinary thought		Identifies value in other disciplines and is able to integrate

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			disciplinary knowledge
2. A well-rounded individual	Interpersonal skills	Conflict resolution	The ability to constructively address differing opinions
		Cultural literacy	Gaining an understanding and appreciation for others cultures and practices
		Navigational ability	Acquiring and refining social queues
		Active listener	Listening to understand what is being said
	Hard skills	Project management	The process of planning an activity, setting goals and utilising resources to complete activity
		Reflective learning competencies	The capacity to reflect on actions as to engage in a process of continuous learning
	Intrapersonal skills	Self-awareness	Clear perception of your personality, including strengths, weaknesses, thoughts, beliefs, motivation and emotions
		Metacognition	The ability to think about your own thoughts

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		Value-driven	Execution of actions is based on values and not rules
		Sense of identity	Involves an understanding of who you are and why you are the way you are
3. Agency development	Socially engaged individual	Critical thinking	Clear, reasoned and well thought out thinking
		Constructive thinking	Managing emotional responses to help clarify thinking
		Social responsibility	A social consciousness and the ability to act thereon
	Social entrepreneur	Proactive collaborative thinker	Internally motivated to seeks to collaboration with others
		Innovative	Ability to generate new, creative or alternate ideas
		Invitational ability	The confidence and skill to convene gatherings and invite guests
		Can-do approach	Willingness to tackle a project and get it done, regardless of obstacles
	Active participant	Takes ownership	Holding oneself accountable and

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			responsible for ones actions
		Is a contributor	Actively participates and adds value to the house